Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-068 H1115

DATE RECEIVED: 11/01/00 RFW LOT # :0011L106

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALY
CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10F87						
% SOLIDS	001	S	00L%S174	10/26/00	11/03/00	11/06/00
% SOLIDS	001 REP	S	00L%S174	10/26/00	11/03/00	11/06/00
NITRATE BY IC	001	S	00LXC076	10/26/00	11/29/00	11/29/00
NITRATE BY IC	001 REP	S	00LXC076	10/26/00	11/29/00	11/29/00
NITRATE BY IC	001 MS	S	00LXC076	10/26/00	11/29/00	11/29/00
TOTAL CYANIDE	001	S	00LC108	10/26/00	11/07/00	11/07/00
TOTAL CYANIDE	001 REP	S	00LC108	10/26/00	11/07/00	11/07/00
TOTAL CYANIDE	001 MS	S	00LC108	10/26/00	11/07/00	11/07/00
PH	001	S	00LPH092	10/26/00	11/02/00	11/02/00
PH	001 REP	S	00LPH092	10/26/00	11/02/00	11/02/00
SULFIDE	001	S	00LSD051	10/26/00	11/06/00	11/06/00
SULFIDE	001 REP	S	00LSD051	10/26/00	11/06/00	11/06/00
SULFIDE	001 MS	S	00LSD051	10/26/00	11/06/00	11/06/00
LAB QC:						
NITRATE BY IC	MB1	S	00LXC076	N/A	11/29/00	11/29/00
NITRATE BY IC	MB1 BS	S	00LXC076	N/A	11/29/00	11/29/00
TOTAL CYANIDE	LCS L	S	00LC108	N/A	11/07/00	11/07/00
TOTAL CYANIDE	LCS L	S	00LC108	N/A	11/07/00	11/07/00
TOTAL CYANIDE	MB1	S	00LC108	N/A	11/07/00	11/07/00
SULFIDE	MB1	S	00LSD051	N/A	11/06/00	11/06/00
SULFIDE	MB1 BS	S	00LSD051	N/A	11/06/00	11/06/00
SULFIDE	MB1 BSD	S	00LSD051	N/A	11/06/00	11/06/00

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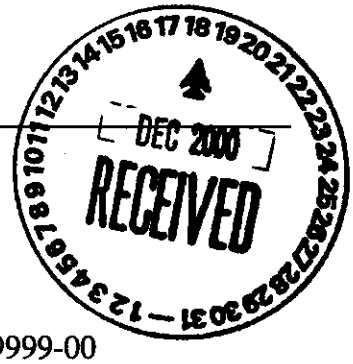
Chemical and Environmental Measurement Information



Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B00-068 H1115
RFW# : 0011L106

W.O. # : 10985-001-001-9999-00
Date Received: 11-01-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of Sulfide.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blanks were within method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analyses were within the 20% RPD control limit.

9. Results for solid samples are reported on a dry weight basis.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-15-00
Date

njp\i11-106

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

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WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		__ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		✓ 9010B/9014	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		✓ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		9095A	

Other: Nitrate **Method:** EPA 300.0 (mod.)

Other: **Method**

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METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/04/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10F87	% Solids	61.3	%	0.01	1.0
		Nitrate by IC	2.2	MG/KG	2.0	1.0
		Cyanide, Total	0.82 u	MG/KG	0.82	1.0
		pH	9.0	SOIL PH	0.01	1.0
		Sulfide	54.8 u	MG/KG	54.8	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/04/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LXC076-MB1	Nitrate by IC	1.2 u	MG/KG	1.2	1.0
BLANK1	00LC108-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	00LSD051-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0

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INORGANICS ACCURACY REPORT 12/04/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10F87	Nitrate by IC	40	2.2	41	92.9	1.0
		Cyanide, Total	7.3	0.82u	8.2	89.5	1.0
		Sulfide	577	0.0	642	90.0	1.0
BLANK10	00LXC076-MB1	Nitrate by IC	25	1.2 u	25	98.5	1.0
BLANK10	00LSD051-MB1	Sulfide	393	40.0 u	459	85.6	1.0
		Sulfide MSD	397	40.0 u	459	86.5	1.0

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INORGANICS DUPLICATE SPIKE REPORT 12/04/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	00LSD051-MB1	Sulfide	85.6	86.5	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/04/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10P87	% Solids	61.3	68.4	10.9	1.0
		Nitrate by IC	2.2	2.1	4.2	1.0
		Cyanide, Total	0.82u	0.82u	NC	1.0
		pH	8.9	9.1	1.8	1.0
		Sulfide	54.8 u	61.9 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/04/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	00LC108-LCS1	Cyanide, Total LCS	1.8	2.0	MG/KG	88.8
LCSS2	00LC108-LCS2	Cyanide, Total LCS	8.7	10	MG/KG	87.2

RECRA LabNet Use Only
00116106

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD SAF# B00-068
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: QJ
QC: Spec Del: Std TAT: 21 day
Date Rec'd: 11-1-00 Date Due: 11-22-00
Account #:

		A	B					C		D			E
Refrigerator #		1	5					5		5	4		5
#/Type Container	Liquid												
	Solid	1AG	1AG					1AG		1AG	+		1AG
Volume	Liquid												
	Solid	250	250					250		250	+		250
Preservatives		—	—					—		—			—
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb	I'		INORG: Metal	CN	IC Anions			PH
RECRA LabNet Use Only		OL24H	OL25H					ACRATO		ICNO3 ISFD	ICNTO		IPH

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	A	B					C		D			E
001	B10F87	✓	✓	S	10/31/00	1445	1	1					1		1	1		1

Special Instructions: Saf B00-068

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Fed Ex	V. Heward	11/1/00	1015				

COMPOSITE WASTE

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 0132

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill #
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 4° C

00 11L 106

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-82	Page 1 of 2

Collector: G.S. Thomas	Company Contact: D Weekes — Telephone No. 372-9524	Project Coordinator: TRENT, SJ	Price Code 8L — Data Turnaround 21 Days
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West	SAF No. B00-068	Air Quality ☐
Ice Chest No. ERC 99-035 (1OF1)	Field Logbook No. EL-1518 — COA JRCRA03200	Method of Shipment: Fed-EX	
Shipped To: TMA/RECRA	Offsite Property No. A010002	Bill of Lading/Air Bill No. 42352953-0132	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

	B	A	D	C	E					
Preservation	Cool 4C	Cool 4C	None	None	None					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045		TIE TO		sample drum	

Sample No.	Matrix *	Sample Date	Sample Time										
001 B10F87	SOIL	10/26/00	1445	X	X	X	X	X		B0YW14		200W-00-0127	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By G.S. Thomas — G.S. Thomas, Date/Time 10/26/00 17:50	Received By DT 10/26/00 — Stored in Ref 3C, Date/Time 10/26/00 17:50	
Relinquished By Removed from Ref 3C 3728, Date/Time 0700 10/31/00	Received By R Thoren, Date/Time 0700 10/31/00	
Relinquished By R Thoren, Date/Time 0700 10/31/00	Received By FEDEX, Date/Time	
Relinquished By FedEx, Date/Time 11/01/00 1015	Received By [signature], Date/Time 11/1/00 1015	
Relinquished By, Date/Time	Received By, Date/Time	
Relinquished By, Date/Time	Received By, Date/Time	

SPECIAL INSTRUCTIONS

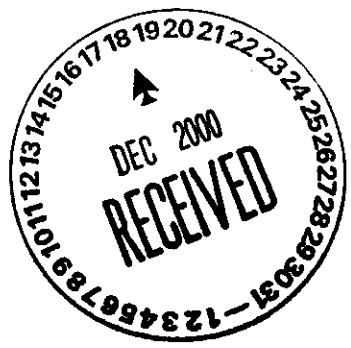
Samples stored in Ref.# 3C at the 3728 Shipping Facility on 10/26/00. Collector not available to relinquish samples on 10/31/00 for shipment. RT 10/31/00

Matrix *: S=Soil, SE=Sediment, SO=Solid, S=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

Temp 4°



Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-068 H1115

DATE RECEIVED: 11/01/00 RFW LOT # :0011L106

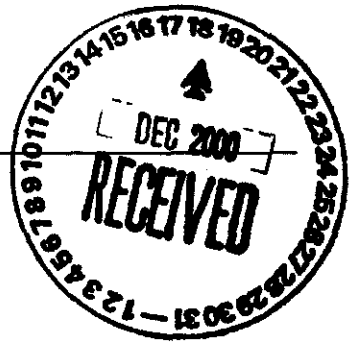
CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10F87						
SILVER, TOTAL	001	S	99L1690	10/26/00	11/07/00	11/07/00
SILVER, TOTAL	001 REP	S	99L1690	10/26/00	11/07/00	11/07/00
SILVER, TOTAL	001 MS	S	99L1690	10/26/00	11/07/00	11/07/00
ARSENIC, TOTAL	001	S	99L1690	10/26/00	11/07/00	11/07/00
ARSENIC, TOTAL	001 REP	S	99L1690	10/26/00	11/07/00	11/07/00
ARSENIC, TOTAL	001 MS	S	99L1690	10/26/00	11/07/00	11/07/00
BARIUM, TOTAL	001	S	99L1690	10/26/00	11/07/00	11/07/00
BARIUM, TOTAL	001 REP	S	99L1690	10/26/00	11/07/00	11/07/00
BARIUM, TOTAL	001 MS	S	99L1690	10/26/00	11/07/00	11/07/00
CADMIUM, TOTAL	001	S	99L1690	10/26/00	11/07/00	11/07/00
CADMIUM, TOTAL	001 REP	S	99L1690	10/26/00	11/07/00	11/07/00
CADMIUM, TOTAL	001 MS	S	99L1690	10/26/00	11/07/00	11/07/00
CHROMIUM, TOTAL	001	S	99L1690	10/26/00	11/07/00	11/07/00
CHROMIUM, TOTAL	001 REP	S	99L1690	10/26/00	11/07/00	11/07/00
CHROMIUM, TOTAL	001 MS	S	99L1690	10/26/00	11/07/00	11/07/00
MERCURY, TOTAL	001	S	00C0383	10/26/00	11/17/00	11/19/00
MERCURY, TOTAL	001 REP	S	00C0383	10/26/00	11/17/00	11/19/00
MERCURY, TOTAL	001 MS	S	00C0383	10/26/00	11/17/00	11/19/00
LEAD, TOTAL	001	S	99L1690	10/26/00	11/07/00	11/07/00
LEAD, TOTAL	001 REP	S	99L1690	10/26/00	11/07/00	11/07/00
LEAD, TOTAL	001 MS	S	99L1690	10/26/00	11/07/00	11/07/00
SELENIUM, TOTAL	001	S	99L1690	10/26/00	11/07/00	11/07/00
SELENIUM, TOTAL	001 REP	S	99L1690	10/26/00	11/07/00	11/07/00
SELENIUM, TOTAL	001 MS	S	99L1690	10/26/00	11/07/00	11/07/00
LAB QC:						
SILVER LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
SILVER, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
ARSENIC LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
ARSENIC, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
BARIUM LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
BARIUM, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
CADMIUM LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
CADMIUM, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-068 H1115

DATE RECEIVED: 11/01/00 RFW LOT # :0011L106

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
CHROMIUM, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
MERCURY LABORATORY	LC1 BS	S	00C0383	N/A	11/17/00	11/19/00
MERCURY, TOTAL	MB1	S	00C0383	N/A	11/17/00	11/19/00
LEAD LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
LEAD, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
SELENIUM LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
SELENIUM, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00

RECRA ENVIRONMENTAL INC.
Chemical and Environmental Measurement Information



Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-068
RFW#: 0011L106
SDG/SAF#: H1115/B00-068

W.O.#: 10985-001-001-9999-00
Date Received: 11-01-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

12-14-00

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory
Date

gmb/m11-106

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0011L106

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B	__200.7			__99
Antimony	__6010B __7041 [5]	__200.7 __204.2			__99
Arsenic	✓6010B __7060A [5]	__200.7 __206.2	__3113B		__99
Barium	✓6010B	__200.7			__99
Beryllium	__6010B	__200.7			__99
Bismuth	__6010B [1]	__200.7 [1]		__1620	__99
Boron	__6010B	__200.7			__99
Cadmium	✓6010B __7131A [5]	__200.7 __213.2			__99
Calcium	__6010B	__200.7			__99
Chromium	✓6010B __7191 [5]	__200.7 __218.2			__SS17
Cobalt	__6010B	__200.7			__99
Copper	__6010B __7211 [5]	__200.7 __220.2			__99
Iron	__6010B	__200.7			__99
Lead	✓6010B __7421 [5]	__200.7 __239.2	__3113B		__99
Lithium	__6010B __7430 [4]	__200.7		__1620	__99
Magnesium	__6010B	__200.7			__99
Manganese	__6010B	__200.7			__99
Mercury	✓7470A [3] __7471A [3]	__245.1 [2] __245.5 [2]			__99
Molybdenum	__6010B	__200.7			__99
Nickel	__6010B	__200.7			__99
Potassium	__6010B __7610 [4]	__200.7 __258.1 [4]			__99
Rare Earths	__6010B [1]	__200.7 [1]		__1620	__99
Selenium	✓6010B __7740 [5]	__200.7 __270.2	__3113B		__99
Silicon	__6010B [1]	__200.7		__1620	__99
Silica	__6010B	__200.7		__1620	__99
Silver	✓6010B __7761 [5]	__200.7 __272.2			__99
Sodium	__6010B __7770 [4]	__200.7 __273.1 [4]			__99
Strontium	__6010B	__200.7			__99
Thallium	__6010B __7841 [5]	__200.7 __279.2 __200.9			__99
Tin	__6010B	__200.7			__99
Titanium	__6010B	__200.7			__99
Uranium	__6010B [1]	__200.7 [1]		__1620	__99
Vanadium	__6010B	__200.7			__99
Zinc	__6010B	__200.7			__99
Zirconium	__6010B [1]	__200.7 [1]		__1620	__99

Other:_____ Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/14/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10F87	Silver, Total	0.13 u	MG/KG	0.13	1.0
		Arsenic, Total	1.2	MG/KG	0.41	1.0
		Barium, Total	41.1	MG/KG	0.02	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	17.5	MG/KG	0.11	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.4	MG/KG	0.25	1.0
		Selenium, Total	0.52 u	MG/KG	0.52	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/14/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1690-MB1	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.09 u	MG/KG	0.09	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0
BLANK1	00C0383-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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INORGANICS ACCURACY REPORT 12/14/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10P87	Silver, Total	5.5	0.13u	6.0	91.7	1.0
		Arsenic, Total	221	1.2	242	91.0	1.0
		Barium, Total	263	41.1	242	92.0	1.0
		Cadmium, Total	5.5	0.04u	6.0	91.7	1.0
		Chromium, Total	39.4	17.5	24.2	90.5	1.0
		Mercury, Total	0.23	0.02u	0.26	91.8	1.0
		Lead, Total	58.3	3.4	60.4	90.9	1.0
		Selenium, Total	213	0.52u	242	88.0	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/14/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10F87	Silver, Total	0.13u	0.13u	NC	1.0
		Arsenic, Total	1.2	1.4	15.4	1.0
		Barium, Total	41.1	56.0	30.7	1.0
		Cadmium, Total	0.04u	0.04u	NC	1.0
		Chromium, Total	17.5	22.3	24.1	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Lead, Total	3.4	4.5	27.8	1.0
		Selenium, Total	0.52u	0.52u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/14/00

CLIENT: TNUHANFORD B00-068 H1115 RECRA LOT #: 0011L106

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1690-LC1	Silver, LCS	47.1	50.0	MG/KG	94.2
		Arsenic, LCS	912	1000	MG/KG	91.2
		Barium, LCS	469	500	MG/KG	93.7
		Cadmium, LCS	23.8	25.0	MG/KG	95.2
		Chromium, LCS	48.2	50.0	MG/KG	96.4
		Lead, LCS	234	250	MG/KG	93.7
		Selenium, LCS	886	1000	MG/KG	88.6
LCS1	00C0383-LC1	Mercury, LCS	0.61	0.7	MG/KG	86.2

RECRA LabNet Use Only

00111L106

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - HANFORD SAF# B00-068

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: QJ

QC: Spec Del: Std TAT: 21 day

Date Rec'd: 11-1-00 Date Due: 11-22-00

Account #:

	A	B	C	D	E
Refrigerator #	1	5	5	5	5
#/Type Container – Solid	1AG	1AG	1AG	1AG	1AG
Volume – Solid	250	250	250	250	250
Preservatives	—	—	—	—	—
Analyses Requested	VOA	BNA	Metal	IC	AI
RECRA LabNet Use Only	OLC24H	OLC25H	ACRATO	ICN03 ISFD / ICNTO	IPH

ORGANIC: VOA, BNA, Pest/PCB, Herb — INORG: Metal, CN

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	OLC24H	OLC25H	ACRATO	ICN03 ISFD	ICNTO	IPH
001	B10F87	✓	✓	S	10/26/00	1445	1	1	1	1	1	1

Special Instructions: Saf B00-068

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # [signature]
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 4° C

Relinquished by	Received by	Date	Time
Fed Ex	V. [signature]	11/1/00	1015

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

4235 7954 8132

12

00 11L 106

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-82	Page 1 of 1

Collector: G.S. Thomas	Company Contact: D Weekes; Telephone No. 372-9524	Project Coordinator: TRENT, SJ	Price Code 8L; Data Turnaround 21 Days
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West	SAF No. B00-068	Air Quality ☐
Ice Chest No. ERC 99-035 (1 of 1)	Field Logbook No. EL-1518; COA JRCRA03200	Method of Shipment: Fed-EX	
Shipped To: TMA/RECRA	Offsite Property No. A010002	Bill of Lading/Air Bill No. 4235 2953-0132	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

	B	A	D	C	E					
Preservation	Cool 4C	Cool 4C	None	None	None					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045		TIE TO		sample drum	

Sample No.	Matrix *	Sample Date	Sample Time									
001 B10F87	SOIL	10/26/00	1445	X	X	X	X	X		BOYW14		2000-00-0127

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By G.S. Thomas / GS Thomas	10/26/00 17:50	Received By PT 10/26/00 stored in Ref 3C	10/26/00 17:50
Relinquished By Removed from Ref 3C 3728	0700 10/31/00	Received By R Thoren	0700 10/31/00
Relinquished By R Thoren	0700 10/31/00	Received By FEDEX	
Relinquished By FedEx	11/01/00 1015	Received By [signature]	11/1/00 1015
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 3C at the 3728 Shipping Facility on 10/26/00. Collector not available to relinquish samples on 10/31/00 for shipment.

PT 10/31/00

Matrix *: S=Soil, SE=Sediment, SO=Solid, S=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

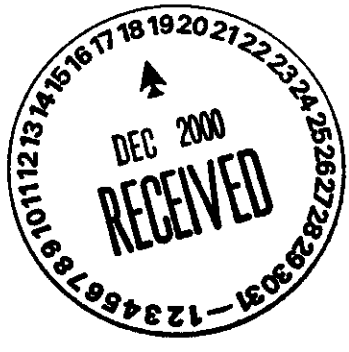
BHI-EE-011 (10/99)

Temp 4°

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-068 H1115

DATE RECEIVED: 11/01/00 RFW LOT # :0011L106

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10F87	001	S	00LE1407	10/26/00	11/02/00	11/21/00
B10F87	001 MS	S	00LE1407	10/26/00	11/02/00	11/21/00
B10F87	001 MSD	S	00LE1407	10/26/00	11/02/00	11/21/00
LAB QC:						
SBLKFB	MB1	S	00LE1407	N/A	11/02/00	11/21/00
SBLKFB	MB1 BS	S	00LE1407	N/A	11/02/00	11/21/00



RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-068
RFW #: 0011L106
SDG/SAF #: H1115/B00-068

W.O. #: 10985-001-001-9999-00
Date Received: 11-01-00

SEMIVOLATILE

One (1) soil sample was collected on 10-26-00.

The sample and its associated QC samples were extracted on 11-02-00 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for TCL Semivolatiles on 11-21-00.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The samples were extracted and analyzed within required holding times.

3. Non-target compounds were identified in these samples.

4. All surrogate recoveries were within EPA QC limits.

5. Four (4) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.

6. One (1) of eleven (11) blank spike recoveries was outside acceptance criteria..

7. Low recoveries were reported for the spike compound, Pentachlorophenol. The presence of Pentachloromethoxy Benzene in the Chromatograms indicated that a conversion had occurred during the extraction process. Pentachlorophenol conversion was not detected in the unspiked sample analyses. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

8. Manual integrations are performed according to OP L-QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in Section III ("Technical Flags For Manual Integration"); hard copies of the integrations have been included with the quantitation data.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

9. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

by _____

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-11-00
Date

pef\group\data\bna\tnu-hanford-11-106.doc

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 00MS106

Initiator: Seymour Batch: 00LL106 Parameter: BNA
Date: 11/22/00 Samples: , Matrix: Soil
Client: TNU Hanford Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1107

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

PCP not recovered in MS, MSD or BS, low but passes criteria in MSD

2. Known or Probable Causes(s)

Pentachlorophenol conversion during extraction.

3. Discussion and Proposed Action Other Description: narrate.

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: [signature] 11/22/00

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 12-6-00 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Pastor
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rycklak/Layman
__	X QA (file): Popp	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Doughty/Kiger	__	__ Other: _____

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

MP - Missed Peak: manually added peak not found by automatic quan program.

PA - Peak Assignment: quan report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List — Report Date: 11/27/00 08:33

RFW Batch Number: **0011L106** Client: **TNUHANFORD B00-068 H1115** Work Order: 10985001001 Page: 1a

	Cust ID:	B10F87	B10F87	B10F87	SBLKFB	SBLKFB BS
Sample Information	RFW#:	001	001 MS	001 MSD	00LE1407-MB1	00LE1407-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	79 %	36 %	59 %	60 %	53 %
	2-Fluorobiphenyl	86 %	43 %	67 %	64 %	58 %
	Terphenyl-d14	106 %	59 %	84 %	86 %	81 %
	Phenol-d5	74 %	38 %	58 %	63 %	53 %
	2-Fluorophenol	76 %	31 %	58 %	63 %	55 %
	2,4,6-Tribromophenol	25 %	36 %	77 %	44 %	53 %
Phenol		540 U	36 %	52 %	330 U	64 %
bis(2-Chloroethyl)ether		540 U	540 U	540 U	330 U	330 U
2-Chlorophenol		540 U	34 %	51 %	330 U	63 %
1,3-Dichlorobenzene		540 U	540 U	540 U	330 U	330 U
1,4-Dichlorobenzene		540 U	23 * %	45 %	330 U	63 %
1,2-Dichlorobenzene		540 U	540 U	540 U	330 U	330 U
2-Methylphenol		540 U	540 U	540 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		540 U	540 U	540 U	330 U	330 U
3- and/or 4-Methylphenol		540 U	540 U	540 U	330 U	330 U
N-Nitroso-di-n-propylamine		540 U	36 * %	55 %	330 U	63 %
Hexachloroethane		540 U	540 U	540 U	330 U	330 U
Nitrobenzene		540 U	540 U	540 U	330 U	330 U
Isophorone		540 U	540 U	540 U	330 U	330 U
2-Nitrophenol		540 U	540 U	540 U	330 U	330 U
2,4-Dimethylphenol		540 U	540 U	540 U	330 U	330 U
bis(2-Chloroethoxy)methane		540 U	540 U	540 U	330 U	330 U
2,4-Dichlorophenol		540 U	540 U	540 U	330 U	330 U
1,2,4-Trichlorobenzene		540 U	34 * %	50 %	330 U	63 %
Naphthalene		540 U	540 U	540 U	330 U	330 U
4-Chloroaniline		540 U	540 U	540 U	330 U	330 U
Hexachlorobutadiene		540 U	540 U	540 U	330 U	330 U
4-Chloro-3-methylphenol		540 U	37 %	59 %	330 U	66 %
2-Methylnaphthalene		540 U	540 U	540 U	330 U	330 U
Hexachlorocyclopentadiene		540 U	540 U	540 U	330 U	330 U
2,4,6-Trichlorophenol		540 U	540 U	540 U	330 U	330 U
2,4,5-Trichlorophenol		1400 U	1300 U	1400 U	830 U	830 U

*= Outside of EPA CLP QC limits.

Cust ID:	B10F87		B10F87		B10F87		SBLKFB		SBLKFB BS	
RFW#:	001		001 MS		001 MSD		00LE1407-MB1		00LE1407-MB1	
2-Chloronaphthalene	540	U	540	U	540	U	330	U	330	U
2-Nitroaniline	1400	U	1300	U	1400	U	830	U	830	U
Dimethylphthalate	540	U	540	U	540	U	330	U	330	U
Acenaphthylene	540	U	540	U	540	U	330	U	330	U
2,6-Dinitrotoluene	540	U	540	U	540	U	330	U	330	U
3-Nitroaniline	1400	U	1300	U	1400	U	830	U	830	U
Acenaphthene	540	U	41	%	59	%	330	U	68	%
2,4-Dinitrophenol	1400	U	1300	U	1400	U	830	U	830	U
4-Nitrophenol	1400	U	27	%	62	%	830	U	50	%
Dibenzofuran	540	U	540	U	540	U	330	U	330	U
2,4-Dinitrotoluene	540	U	44	%	67	%	330	U	76	%
Diethylphthalate	540	U	540	U	540	U	330	U	330	U
4-Chlorophenyl-phenylether	540	U	540	U	540	U	330	U	330	U
Fluorene	540	U	540	U	540	U	330	U	330	U
4-Nitroaniline	1400	U	1300	U	1400	U	830	U	830	U
4,6-Dinitro-2-methylphenol	1400	U	1300	U	1400	U	830	U	830	U
N-Nitrosodiphenylamine (1)	540	U	540	U	540	U	330	U	330	U
4-Bromophenyl-phenylether	540	U	540	U	540	U	330	U	330	U
Hexachlorobenzene	540	U	540	U	540	U	330	U	330	U
Pentachlorophenol	1400	U	0 *	%	21	%	830	U	0 *	%
Phenanthrene	540	U	540	U	540	U	330	U	330	U
Anthracene	540	U	540	U	540	U	330	U	330	U
Carbazole	540	U	540	U	540	U	330	U	330	U
Di-n-butylphthalate	540	U	540	U	540	U	330	U	330	U
Fluoranthene	540	U	540	U	540	U	330	U	330	U
Pyrene	540	U	55	%	75	%	330	U	90	%
Butylbenzylphthalate	540	U	540	U	540	U	330	U	330	U
3,3'-Dichlorobenzidine	540	U	540	U	540	U	330	U	330	U
Benzo(a)anthracene	540	U	540	U	540	U	330	U	330	U
Chrysene	540	U	540	U	540	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	2000	B	4900	B	1200	B	240	J	480	B
Di-n-octyl phthalate	540	U	540	U	540	U	330	U	330	U
Benzo(b)fluoranthene	540	U	540	U	540	U	330	U	330	U
Benzo(k)fluoranthene	540	U	540	U	540	U	330	U	330	U
Benzo(a)pyrene	540	U	540	U	540	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	540	U	540	U	540	U	330	U	330	U
Dibenz(a,h)anthracene	540	U	540	U	540	U	330	U	330	U
Benzo(g,h,i)perylene	540	U	540	U	540	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

CLIENT SAMPLE NO.

B10F87

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1115

Matrix: (soil/water) SOIL Lab Sample ID: 0011L106-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A112105

Level: (low/med) LOW Date Received: 11/01/00

% Moisture: 39 decanted: (Y/N) Date Extracted: 11/02/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/21/00

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.12	1000	JB
2.	UNKNOWN	24.72	100	J
3.	UNKNOWN	25.08	300	J
4.	UNKNOWN	25.23	200	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKFB

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1115

Matrix: (soil/water) SOIL Lab Sample ID: 00LE1407-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A112103

Level: (low/med) LOW Date Received: 11/02/00

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 11/02/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/21/00

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.12	100	J

RECRA LabNet Use Only: 00116106

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - HANFORD SAF# B00-068
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: QJ
QC: Spec Del: Std TAT: 21 day
Date Rec'd: 11-1-00 Date Due: 11-22-00
Account #:

	A	B						C		D			E	
Refrigerator #	1	5						5		5	→		5	
#/Type Container Liquid														
#/Type Container Solid	1AG	1AG						1AG		1AG	→		1AG	
Volume Liquid														
Volume Solid	250	250						250		250	→		250	
Preservatives	—	—						—		—			—	
Analyses Requested	ORGANIC: VOA	BNA	Pest/PCB	Herb		I'		INORG: Metal	CN	IC Anions			AH	

MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	OLC24H	OLC25H						ACRATO		ICNO3 ISFD	ICNTO		IPH	
001	B10F87	✓	✓	S	10/26/00	1445	1	1						1		1	1		1	

(RECRA LabNet Use Only)

Special Instructions: SAF B00-068

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # [signature]
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 4° C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	11/1/00	1015

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 0132

ORIGINAL REWRITTEN

JO 11L 106

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-068-82	Page 1 of 1
Collector: G.S. Thomas	Company Contact: D Weekes	Telephone No.: 372-9524	Project Coordinator: TRENT, SJ	Price Code: 8L; Data Turnaround: 21 Days
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West		SAF No.: B00-068	Air Quality:
Ice Chest No.: ERC 99-035 (1 OF 1)	Field Logbook No.: EL-1518	COA: JRCRA03200	Method of Shipment: Fed-EX	
Shipped To: TMA/RECRA	Offsite Property No.: A010002		Bill of Lading/Air Bill No.: 423579533-0132	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

	B	A	D	C	E					
Preservation	Cool 4C	Cool 4C	None	None	None					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL), Semi-VOA -- 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	IC Anions - 300.0 (Nitrate), Sulfides - 9030, Total Cyanide - 9010	ICP Metals - 6010A (Supertrace), Mercury - 7471 - (CV)	pH (Soil) - 9045			TieTo	Sample Comm	
Sample No.	Matrix *	Sample Date	Sample Time							
B10F87	SOIL	10/26/00	1445	X	X	X	X	X		BOYD14	200 W-00-0127

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By: G.S. Thomas	Date/Time:	Received By: BT	Date/Time: 10/26/00
Relinquished By: G.S. Thomas	Date/Time: 10/26/00 17:50	Received By: stored in Ref 3C	Date/Time: 10/26/00 17:50
Relinquished By: Remained in Ref 3C 3728 10/31/00	Date/Time: 0700	Received By: R.T. Thoren	Date/Time: 0700 10/31/00
Relinquished By: R.T. Thoren	Date/Time: 0700 10/31/00	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 11/01/00 1015	Received By: Vicki Kenney	Date/Time: 11/1/00 1015
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 3C at the 3728
Shipping Facility on 10/26/00
Collector not available to relinquish samples
on 10/31/00 for shipment.
PT 10/31/00

Matrix *: S=Soil; SE=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

Temp 4°

Figure 1. Sample Check-in List

Date/Time Received: 11-1-00 / 1015

SDG#: 00116100

Work Order Number: - SAF# B000C0E

Shipping Container ID: - Chain of Custody # B000C0E-E2

1. Custody Seals on shipping container intact? Yes [Y] No [ ]
2. Custody Seals dated and signed? Yes [Y] No [ ]
3. Chain-of-Custody record present? Yes [Y] No [ ]
4. Cooler temperature 4.0°C
5. Vermiculite/packing materials is Wet [ ] Dry [Y]
6. Number of samples in shipping container: 5
7. Sample holding times exceeded? Yes [ ] No [Y]

8. Samples have:
   - ✓ tape
   - ____ hazard labels
   - ____ custody seals
   - ✓ appropriate sample labels

9. Samples are:
   - ✓ in good condition
   - ____ leaking
   - ____ broken
   - ____ have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [Y]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Thoppil / Becca Date: 11-1-00

Telephoned to: _____ On _____ By _____

ERC Radiological Counting Facility Analysis Report

RCF Number RCF8635

Sample Date & Time 10/26/00 1615

Project ID: 200G/W SAF Number: B00-068 Date Analyzed 10/30/00 1:34:

Sample ID: B0YW14

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
Co-60	<	2.5E-01		2.5E-01
Cs-137	<	2.5E-01		2.5E-01
Eu-152	<	5.7E-01		5.7E-01
Eu-154	<	8.8E-01		8.8E-01
Eu-155	<	5.9E-01		5.9E-01
Bi-214	<	1.8E+00		1.8E+00
Ra-226	<	2.6E+00		2.6E+00
Ac-228	<	6.8E-01		6.8E-01
Pa-234	<	3.9E-01		3.9E-01
Th-234	<	2.2E+00		2.2E+00
U-235	<	1.2E+00		1.2E+00
Am-241	<	3.5E-01		3.5E-01

TIE TO B10F87

Total GEA (pCi/g) +/-

	Activity (pCi/g)		Error (pCi/g)	Alpha MDC (pCi/g)	Beta MDC (pCi/g)
Gross Alpha**	1.3E+00	+/-	5.7E-01	6.2E-01	
Gross Beta	1.5E+01	+/-	1.5E+00		8.5E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorption
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst C.V. Fleming 10/30/00

Report To: Joan Kenner Fax: 372-9487

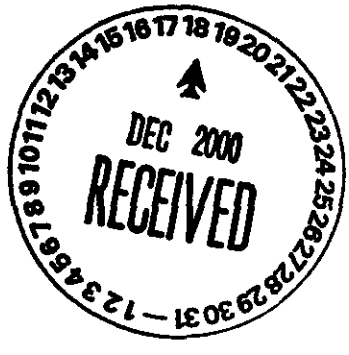
Joan Kenner 372-9487

Report Printed: Monday, October 30, 2000

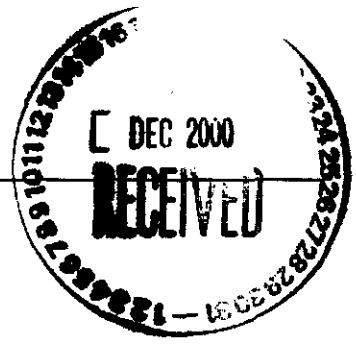
Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-068 H1115

DATE RECEIVED: 11/01/00 RFW LOT # :0011L106

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10F87	001	S	00LVX347	10/26/00	N/A	11/03/00
B10F87	001 MS	S	00LVX347	10/26/00	N/A	11/03/00
B10F87	001 MSD	S	00LVX347	10/26/00	N/A	11/03/00
LAB QC:						
VBLKYG	MB1	S	00LVX347	N/A	N/A	11/03/00
VBLKYG	MB1 BS	S	00LVX347	N/A	N/A	11/03/00



RECRA ENVIRONMENTAL INC.
Chemical and Environmental Measurement Information



Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-068
RFW #: 0011L106
SDG/SAF #: H1115/B00-068

W.O. #: 10985-001-001-9999-00
Date Received: 11-01-00

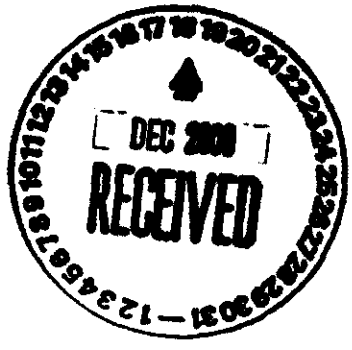
GC/MS VOLATILE

One (1) soil sample was collected on 10-26-00.

The sample and its associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 11-03-00.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was analyzed within required holding time.
3. Non-target compounds were not detected in these samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the and less than the CRQL, respectively.
8. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."



By _____ 11-28-00
J. Michael Taylor — Date
VP, Laboratory General Manager
Lionville Laboratory

pef\group\data\voa\tnu-hanford-11-106.doc

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List — Report Date: 11/22/00 09:35

RFW Batch Number: **0011L106** Client: **TNUHANFORD B00-068 H1115** Work Order: 10985001001 Page: 1a

	Cust ID:	B10F87	B10F87	B10F87	VBLKYG	VBLKYG BS
Sample Information	RFW#:	001	001 MS	001 MSD	00LVX347-MB1	00LVX347-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.04	1.02	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	97 %	95 %	94 %	94 %	92 %
	Bromofluorobenzene	90 %	89 %	90 %	88 %	89 %
	1,2-Dichloroethane-d4	88 %	90 %	90 %	88 %	92 %
Chloromethane		17 U	17 U	16 U	10 U	10 U
Bromomethane		17 U	17 U	16 U	10 U	10 U
Vinyl Chloride		17 U	17 U	16 U	10 U	10 U
Chloroethane		17 U	17 U	16 U	10 U	10 U
Methylene Chloride		30 B	34 B	37 B	9	10 B
Acetone		11 JB	8 JB	7 JB	1 J	10 U
Carbon Disulfide		8 U	8 U	8 U	5 U	5 U
1,1-Dichloroethene		8 U	87 %	89 %	5 U	83 %
1,1-Dichloroethane		8 U	8 U	8 U	5 U	5 U
1,2-Dichloroethene (total)		8 U	8 U	8 U	5 U	5 U
Chloroform		8 U	8 U	8 U	5 U	5 U
1,2-Dichloroethane		8 U	8 U	8 U	5 U	5 U
2-Butanone		17 U	17 U	16 U	10 U	10 U
1,1,1-Trichloroethane		8 U	8 U	8 U	5 U	5 U
Carbon Tetrachloride		8 U	8 U	8 U	5 U	5 U
Bromodichloromethane		8 U	8 U	8 U	5 U	5 U
1,2-Dichloropropane		8 U	8 U	8 U	5 U	5 U
cis-1,3-Dichloropropene		8 U	8 U	8 U	5 U	5 U
Trichloroethene		8 U	93 %	94 %	5 U	91 %
Dibromochloromethane		8 U	8 U	8 U	5 U	5 U
1,1,2-Trichloroethane		8 U	8 U	8 U	5 U	5 U
Benzene		8 U	92 %	94 %	5 U	92 %
Trans-1,3-Dichloropropene		8 U	8 U	8 U	5 U	5 U
Bromoform		8 U	8 U	8 U	5 U	5 U
4-Methyl-2-pentanone		17 U	17 U	16 U	10 U	10 U
2-Hexanone		17 U	17 U	16 U	10 U	10 U
Tetrachloroethene		8 U	8 U	8 U	5 U	5 U
1,1,2,2-Tetrachloroethane		8 U	8 U	8 U	5 U	5 U
Toluene		8 U	95 %	96 %	5 U	91 %

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0011L106** Client: **TNUHANFORD B00-068 H1115** Work Order: 10985001001 Page: 1b

	Cust ID:	B10F87	B10F87	B10F87	VBLKYG	VBLKYG BS
	RFW#:	001	001 MS	001 MSD	00LVX347-MB1	00LVX347-MB1
Chlorobenzene		8 U	91 %	93 %	5 U	89 %
Ethylbenzene		8 U	8 U	8 U	5 U	5 U
Styrene		8 U	8 U	8 U	5 U	5 U
Xylene (total)		8 U	8 U	8 U	5 U	5 U

*= Outside of EPA CLP QC limits.

RECRA LabNet Use Only

00116106

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - HANFORD SAF# B00-068

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: Std TAT: 21 day

Date Rec'd: 11-1-00 Date Due: 11-22-00

Account #:

	A	B					C		D			E	
Refrigerator #	1	5					5		5	→		5	
#/Type Container – Liquid													
#/Type Container – Solid	1AG	1AG					1AG		1AG	→		1AG	
Volume – Liquid													
Volume – Solid	250	250					250		250	→		250	
Preservatives	—	—					—		—			—	
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: Metal	CN	IC Anions			AI	
RECRA LabNet Use Only	OL24H	OL25H					ACRATO		ICN03 ISFD	ICNTO		IPH	

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	A	B					C		D			E	
001	B10F87	✓	✓	S	10/26/00	1445	1	1					1		1	1		1	

Special Instructions: Saf B00-068

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered
Airbill #
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 4° C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	11/1/00	1015

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 4235 7954 0132

00 11L 106

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-82	Page 1 of 1

Collector: G.S. Thomas	Company Contact: D Weekes — Telephone No. 372-9524	Project Coordinator: TRENT, SJ	Price Code 8L; Data Turnaround 21 Days
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West	SAF No. B00-068	Air Quality
Ice Chest No. ERC 99-035 (1 of 1)	Field Logbook No. EL-1518; COA JRCRA03200	Method of Shipment: Fed-EX	
Shipped To: TMA/RECRA	Offsite Property No. A010002	Bill of Lading/Air Bill No. 4235 7953-0132	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

	B	A	D	C	E					
Preservation	Cool 4C	Cool 4C	None	None	None					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	IC Anions - 300.0 (Nitrate), Sulfides - 9030, Total Cyanide - 9010	ICP Metals - 6010A (Supertrace), Mercury - 7471 - (CV)	pH (Soil) - 9045		Tie To		Sample drum	

Sample No.	Matrix *	Sample Date	Sample Time										
B10F87	SOIL	10/26/00	1445	X	X	X	X	X		B0YW14		200W-00-0127	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By G.S. Thomas / G.S. Thomas	10/26/00 17:50	Received By DT 10/26/00 stored in Ref 3C	10/26/00 17:50
Relinquished By Removed from Ref 3C 3728	0700 10/31/00	Received By R Thoren	0700 10/31/00
Relinquished By R Thoren	0700 10/31/00	Received By FEDEX	
Relinquished By FedEx	11/01/00 1015	Received By [signature]	11/1/00 1015
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 3C at the 3728 Shipping Facility on 10/26/00
Collector not available to relinquish samples on 10/31/00 for shipment.
RT 10/31/00

Matrix *: S=Soil, SE=Sediment, SO=Solid, S=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

Temp 4°

Figure 1. Sample Check-in List

Date/Time Received: 11-1-00 / 1015

SDG#: 00116108

Work Order Number: - SAF# B00-008

Shipping Container ID: - Chain of Custody # B00 008 -82

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 4.0°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 5
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - [✓] tape
   - [ ] hazard labels
   - [ ] custody seals
   - [✓] appropriate sample labels

9. Samples are:
   - [✓] in good condition
   - [ ] leaking
   - [ ] broken
   - [ ] have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Koppi / Becca Date: 11-1-00

Telephoned to: _____ On _____ By _____

ERC Radiological Counting Facility Analysis Report

RCF Number RCF8635

Sample Date & Time 10/26/00 1615

Project ID: 200G/W **SAF Number:** B00-068 **Date Analyzed** 10/30/00 1:34:

Sample ID: B0YW14

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
Co-60	<	2.5E-01		2.5E-01
Cs-137	<	2.5E-01		2.5E-01
Eu-152	<	5.7E-01		5.7E-01
Eu-154	<	8.8E-01		8.8E-01
Eu-155	<	5.9E-01		5.9E-01
Bi-214	<	1.8E+00		1.8E+00
Ra-226	<	2.6E+00		2.6E+00
Ac-228	<	6.8E-01		6.8E-01
Pa-234	<	3.9E-01		3.9E-01
Th-234	<	2.2E+00		2.2E+00
U-235	<	1.2E+00		1.2E+00
Am-241	<	3.5E-01		3.5E-01

TIE TO B10F87

Total GEA (pCi/g) +/-

	Activity (pCi/g)		Error (pCi/g)	Alpha MDC (pCi/g)	Beta MDC (pCi/g)
Gross Alpha**	1.3E+00	+/-	5.7E-01	6.2E-01	
Gross Beta	1.5E+01	+/-	1.3E+00		8.5E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorption
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst C. V. Hanning 10/30/00

Report To: Joan Kessner Fax: 372-9487

Joan Kessner 372-9487

Report Printed: Monday, October 30, 2000